

WHAT IS CLAIMED IS:

1. An isolated and purified antiviral protein or peptide from *Nostoc ellipsosporum*.
- 5 2. A method of obtaining the protein of claim 1, comprising (a) identifying an extract of *Nostoc ellipsosporum* containing antiviral activity, (b) optionally removing high molecular weight biopolymers from said extract, (c) antiviral bioassay-guided fractionating said extract to obtain a crude extract of said protein, and (d) purifying said crude extract by reverse-phase HPLC to obtain said protein.
- 10 15 3. An isolated and purified nucleic acid molecule which is selected from the group consisting of a nucleic acid molecule which encodes an amino acid sequence of SEQ ID NO:2, a nucleic acid molecule which encodes an amino acid sequence of SEQ ID NO:4, a nucleic acid molecule comprising a sequence of SEQ ID NO:1, a nucleic acid molecule comprising a sequence of SEQ ID NO:3, and a nucleic acid molecule that is substantially homologous to any one or more of the aforesaid nucleic acid sequences.
- 20 25 4. An isolated and purified nucleic acid molecule of claim 3 which comprises a nucleic acid sequence encoding at least nine contiguous amino acids of the amino acid sequence of SEQ ID NO:2, which nucleic acid molecule encodes a functional cyanovirin.
- 30 35 5. An isolated and purified nucleic acid molecule comprising a first nucleic acid sequence of claim 3 coupled to a second nucleic acid sequence coding for an effector protein.
6. An isolated and purified nucleic acid molecule comprising a first nucleic acid sequence of claim 4

coupled to a second nucleic acid sequence coding for an effector protein.

7. The nucleic acid molecule of claim 6, wherein
5 said effector protein is selected from the group
consisting of a toxin and an immunological reagent.

8. An isolated and purified protein encoded by the
nucleic acid molecule of claim 3.

10 9. A protein conjugate comprising a protein of
claim 8 coupled to an effector molecule.

10. The protein conjugate of claim 9, wherein said
15 effector molecule targets HIV glycoprotein gp120.

11. The protein conjugate of claim 10, wherein said
effector molecule is selected from the group consisting
of a toxin and an immunological reagent.

20 12. A pharmaceutical composition comprising an
antiviral effective amount of the protein of claim 8 and
a pharmaceutically acceptable carrier therefor.

25 13. A vector which comprises the nucleic acid
molecule of claim 3.

14. A host cell containing the vector of claim 13.

30 15. A method of producing the protein of claim 8,
which method comprises expressing said protein in a host
cell of claim 14.

35 16. A method of preventing the spread of viral
infection comprising treating an inanimate object with an
antiviral effective amount of the protein of claim 8.

17. A method of preventing the spread of viral infection comprising treating ex vivo blood, a blood product, or tissue with an antiviral effective amount of the protein of claim 8.

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18. A method of preventing or treating a viral infection of a host which comprises administering to a host an antiviral effective amount of a protein of claim 8.

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19. A method of preventing or treating a viral infection of a host which comprises transforming ex vivo or in vivo host cells with the nucleic acid molecule of claim 3 to express an antiviral protein encoded by said nucleic acid molecule directly in vivo.

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